

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

February 17, 2017

**MEMO TO:** Steven Stokes, Technical Director  
**FROM:** Ramsey Arnold and Zachery Beauvais, Pantex Site Representatives  
**SUBJECT:** Pantex Plant Report for Week Ending February 17, 2017

**Hoist Components and Light Fixtures:** CNS management declared several nuclear explosive facilities to be non-operational based on an emerging concern with the ability of overhead lighting to meet electrical safety requirements. Many of the impacted facilities had been previously released for full or limited operations following initial actions to address the potential for falling hoist components (see 2/10/17 report). Late last week, explosive safety personnel identified light fixtures with gaps in gaskets installed between the hinged fixture glass lenses and housings. System engineers had previously identified unengaged and missing latches on these lenses but had not identified physical gaps in the gasket. The National Electrical Code (NFPA 70), as referenced in the DOE Explosive Safety Standard, requires light fixtures used in certain hazardous environments to be totally enclosed to exclude the entrance of dust and to prevent the escape of sparks or other hot particles. The presence of gaps invalidates measures taken to meet this requirement. Through facility walkdowns, electrical safety and system engineering personnel identified approximately 900 fixtures installed within the material access area with gaps or latch issues. Engineering personnel evaluated the degraded light fixtures and suggested the gaps were potentially caused by the aging of gasket material, damage to the gasket during bulb replacement, or improper gasket reinstallation following light replacement. The documented safety analysis (DSA) does not rely on the ability of lights to meet NFPA 70 requirements and concludes that hazards posed by sparks ejected from light fixtures are controlled by the fire protection program. The nuclear explosive safety (NES) master study performed to evaluate hazards to operations performed in bays and cells used the ability of light fixtures to meet NEC requirements as an underlying assumption to screen applicable hazards from consideration. A NES study group (NESSG) was convened to perform a NES change evaluation (NCE) to evaluate the safety of continued nuclear explosive operations (NEO) in facilities where light fixtures do not meet NFPA 70 requirements. Based on the physical configuration of degraded light fixtures and information regarding the limited possibilities for explosive dust generation in nuclear explosive facilities, the NESSG determined that the possibility of a spark within the light fixture posing a hazard to NES is not credible if all lens latches are secured and lenses are properly seated. The NESSG documented one deliberation topic related to how CNS protects assumptions provided to NESSGs and configuration management of those assumptions. Maintenance and facilities personnel are developing work orders to repair or replace degraded fixtures and implement future preventive maintenance improvements. At the time of this report, most NEOs remain paused.

**NEO Authorization:** A NESSG conducted an NCE to evaluate process and control changes developed to address increased component sensitivities to electrostatic discharge hazards during legacy dismantlement NEOs on one weapon program (see 11/18/2016 and 2/10/2017 reports). While the changes to the component sensitivities generally affected low-order consequence hazards, the increased sensitivities increased the probability of high order consequences for some scenarios included within the previously approved process. The NESSG concluded that process changes implemented to address these changes improve NES, and they documented no findings against the NES standards. CNS plans to conduct an implementation verification review of the procedural changes and controls.